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| 10/540,965   | 08/25/2005  | Takuji Higashioji    | TOR-05-1179         | 6051             |
| 35811 7590 10/16/2009<br>IP GROUP OF DLA PIPER LLP (US)<br>ONE LIBERTY PLACE<br>1650 MARKET ST, SUITE 4900<br>PHILADELPHIA, PA 19103 |             |                      |                     |                  |
| EXAMINER   |             |                      |                     |                  |
| NELSON, MICHAEL B  |             |                      |                     |                  |
| ART UNIT   |             | PAPER NUMBER         |                     |                  |
| 1794   |             |                      |                     |                  |
| NOTIFICATION DATE  |             | DELIVERY MODE        |                     |                  |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

pto.phil@dlapiper.com

### Office Action Summary

**Application No.**

10/540,965

**Applicant(s)**

HIGASHIOJI ET AL.

**Examiner**

MICHAEL B. NELSON

**Art Unit**

1794

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 July 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 2, 6, 8, 10-14 and 29-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 6, 8, 10-14 and 29-39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(c), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(c) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 07/28/09 has been entered.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1, 2, 6, 8, 10-14, 33, 34 and 37 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 recites vague and indefinite limitations related to the network structure. Firstly, it is not clear what is meant to be considered a "linear element." Secondly, it is unclear how the linear elements contain both the liquid crystal polyester and the non-liquid crystal polyester since the elements depicted in applicant's figure 1 are the result of the separation between these two materials and would therefore only contain elements of the liquid crystal polyester or the non-liquid crystal polyester, not both.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1, 2, 8, 10-14, 28, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takashi (JP 10-0245542), see English language equivalent Hibiya et al. (U.S. 6,136,420), in view of Perez et al. (U.S. 6,331,343).

Regarding claims 1 and 28, Hibiya et al. discloses a laminated film comprising a coextruded B/A/B layered structure (C15, L35-50) with layers B being biaxially stretched but non-porous polyester (C4, L35-45, C6, L5-35) and layer A being a biaxially stretched, porous layer (C4, L25-35) of polyester and an immiscible polymer (i.e. liquid crystal polyester, C5, L5-15). The liquid crystal polyester immiscible polymer is disclosed as being present at 5-45% (See

Abstract) which leaves 95-55% non-liquid crystal polyester (i.e. the polyethylene terephthalate as disclosed in Example 1, C20, L25-60 ), which falls within the claimed range. The process of stretching the film is disclosed as causing the cells (See Abstract). In one example the relative thickness of the layers are disclosed as B/A/B=20/40/20 (i.e. 50% porous layer), which falls within the claimed range (Table 4, C26). The fine cells of the A layer are a network structure.

Hibiya et al. does not specifically disclose the instant claimed specific gravity, however, one of ordinary skill in the art would adjust the amount of bubbles (i.e. amount of void space and therefore specific gravity) in the network containing layer, through routine experimentation, in order to optimize the mechanical strength (among other properties) of the overall laminate.

Regarding the connected linear elements limitations, the immiscible polymer separation process of Hibiya et al., especially at higher concentrations of immiscible polymer (i.e. 45%) would produce a structure having heterogeneous zones (i.e. cells) of continuous phase polymer and discrete phase polymer (i.e. immiscible polymer). The stretched cells, or the continuous phase polymers which run between them, would be of a substantially linear shape and would be interconnected. Perez et al. is directed to a similar immiscible polymer blend which is stretched to create voids (i.e. cells) (See Abstract). Perez et al. affirms that in this process, the voids "lack distinct boundaries" and are therefore interconnected (C6, L20-25).

Regarding claims 2, 8, 10-14 and 29, Hibiya et al. discloses all of the limitations as set forth above. Additionally, Hibiya et al. discloses that the non-fine bubble layers are on both sides of the bubble layer. The liquid crystal polyester immiscible polymer is disclosed as being present at 5-45% (See Abstract). In one example the relative thickness of the layers are

disclosed as B/A/B=20/40/20 (i.e. 50% porous layer), which falls within the claimed range (Table 4, C26). Non-liquid crystal polyester (i.e. the polyethylene terephthalate as disclosed in Example 1, C20, L25-60) is disclosed in both A and B layers.

Regarding the various physical properties of claims 12-14, the amount of void space (i.e. the amount of bubbles) is a variable that one having ordinary skill in the art would have found obvious to modify, through routine experimentation, to optimize the mechanical strength, thermal insulation and thermal expansion characteristics of the overall laminate.

8. Claims 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takashi (JP 10-0245542), see English language equivalent Hibiya et al. (U.S. 6,136,420), in view of Perez et al. (U.S. 6,331,343) as applied to claim 1 above, and further in view of Nakatani et al. (2001/0003610).

Regarding claims 30-32, Hibiya et al. discloses all of the limitations as set forth above. Hibiya et al. does not explicitly disclose electronic circuitry as an commercial application. Nakatani et al. discloses a void containing, insulating, base material with tackfree (i.e. release films) on both sides thereof for use with electronic circuits (See Abstract).

The inventions of both modified Hibiya et al. and Nakatani et al. are drawn to the field of void containing laminates and therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to have used the void containing laminate of modified Hibiya et al. as a tack-free electrically insulating circuit material as taught by Nakatani et al. for the purposes of imparting improved marketability to the invention.

9. Claims 6 and 33-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takashi (JP 10-0245542 see English language equivalent Hibiya et al. (U.S. 6,136,420), in view of Perez et al. (U.S. 6,331,343) as applied to claim 1 above, and further in view of Nakamura et al. (U.S. 5,830,940).

Regarding claims 6 and 33-36, Hibiya et al. discloses all of the limitations as set forth above. Hibiya et al. only discloses a general liquid crystal polyester ([0017]) for use with the non-liquid crystal polyester ([0009]). Nakamura et al. discloses a liquid crystal polyester which was known to be made by copolymerizing polyethylene terephthalate with p-hydroxybenzoic acid (C1, L20-50) and which exhibits superior flowability, thermal resistance and mechanical properties.

The inventions of both Hibiya et al. and Nakamura et al. are drawn to the field of liquid crystal polyesters and therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to have modified the non-specific liquid crystal polyester of Hibiya et al. by using the specific example of a liquid crystal polyester as taught by Nakamura et al. for the purposes of imparting superior flowability, thermal resistance and mechanical properties.

Given the beneficial properties of the liquid crystal polyester of Nakamura et al., it would have been obvious to one having ordinary skill in the art to have adjusted the relative amount of liquid crystal polyester to greater than the 45% disclosed in Hibiya et al. (i.e. including amounts greater than 50% as instantly claimed) in order to impart a higher degree of the beneficial properties mentioned in Nakamura et al. to the final product of Hibiya et al.

Regarding claim 39, Hibiya et al. discloses all of the limitations as set forth above. Additionally, Hibiya et al. discloses that reclaimed scrap chips of previous runs of production

could be recycled back into the production line to contribute to at least part of the cell containing layer composition (C6, L40-C7, L25 and Comparative Example 2, C21, L10-25). The reclaimed chips being used from previous examples would contain the continuous and discrete phase polymers at the relative amounts disclosed in Hibiya et al., which read on the instant claimed ranges.

***Response to Arguments***

10. Applicant's arguments filed on 07/28/09 have been considered but are not persuasive.

11. Regarding applicant's argument against the 112 2<sup>nd</sup> paragraph rejection of "linear element," the examiner maintains the term is vague and indefinite. The term is not known to those having ordinary skill in the art. Even referring to the cited portion of the specification, the items listed as linear elements include items which do not seem linear in any respect (i.e. beads). This seemingly contradictory basis for defining the term adds to the confusion over its scope. Since beads can apparently be considered "linear" it is unclear what is and what is not considered a linear element. The fact that the applicant relies on the term to distinguish the instant application from the prior art only increases the importance of determining the definition of the term. The other 112 2<sup>nd</sup> paragraph rejections are withdrawn as a result of applicant amendments.

12. Regarding applicant's arguments against the Hibiya reference, the examiner disagrees. Applicant argues that the Hibiya reference does not possess the linear network and alleges that the examiner has agreed to this fact. The examiner does not agree that Hibiya reference does not possess the linear network, rather the examiner only agrees that the reference does not explicitly disclose the network using the phrase "linear elements." As confirmed by the Perez reference,



(and numerous other references related to the stretching of a film made on incompatible polymers), the stretching process of Hibiya applied to the film composition of Hibiya would result in at least some degree of interconnected linear elements (i.e. a network). Hibiya even discloses a structure which is considered to be linear elements (i.e. cells, See Abstract). Perez is only used to show that when these cells are formed there is at least some degree of interconnectivity between the cells and that the interconnected cells would be fibril in nature (See Fig. 2-4). The applicant alleges that the Hibiya and Perez references "are completely different from one another and employ different methods" however there is no substantive argument to point out these differences. The examiner notes that there are substantial similarities between the two references (i.e. incompatible polymers used to form continuous and discrete phases in a film due to the stretching of the film C5, L35-C6, L35 of Perez).

13. More to the point, it is unclear if the linear elements even need to be fibrillar in nature since beads are mentioned as possible candidates for the linear elements in the instant specification. If beads qualify as linear elements then the cells of Hibiya et al. would also qualify.

14. Applicant argues that there is an additional processing step in the instant invention which renders the network structure different from that of Hibiya et al. The examiner notes, without addressing whether the additional stretching step is novel or obvious in view of the prior art, that the attribute in question is not claimed, nor has it been shown that the attribute results in one of the claimed properties (i.e. linear elements). If the applicant is alleging that the additional process step produces some unique structural feature in the finished product, there has not been provided sufficient evidence to confirm this allegation nor is the resulting feature claimed. If the

applicant is implying that the step is necessary to produce the instant "linear elements" the examiner disagree that, given the currently vague understanding of the term, linear elements could *only* be produced by this additional process step. The "conventional longitudinal and transverse stretching" of Hibiya imparts a network structure which is considered to be made up of "linear elements."

15. Applicant argues against the Hibiya reference on the grounds that it does not disclose the density of the film; however, as explained in the rejection, the density would be directly related to the amount of voids created in the film and would therefore be adjusted by one having ordinary skill in the art.

16. In summation, applicant is advised to clarify the meaning of the term "linear elements" in the claims since up to this point the vague definition of the term has hampered the prosecution of the application. Particularly in light of the applicant's insistence that the prior art does not possess this property it is necessary to clearly define the property.

#### ***Conclusion***

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL B. NELSON whose telephone number is (571) 270-3877. The examiner can normally be reached on Monday through Thursday 6AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Sample can be reached on (571) 272-1376. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David R. Sample/  
Supervisory Patent Examiner, Art Unit 1794

/MN/  
08/20/09